

# Factors Associated with Utilization of Postnatal Care Services

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## ABSTRACT

**Background:** Preventable causes of death accounts for 810 women per day. Care provided during the child-bearing and after the childbirth is of vital importance. Despite of the facts, many women in developing world deprive of this service. Therefore, this study aims to explore the contributing factors for Postnatal care service in urban areas of Chitwan, Nepal.

**Methods:** A cross-sectional study was conducted among 212 mothers who delivered within last one year. Data collection was conducted through pre-tested questionnaire in Nepali language after taking ethical approval and informed consent. Descriptive and bi-variate statistics were applied in analysis.

**Results:** Higher number of mothers (39.2%) were in 25-29 years age groups. Hindu were 89.6% and Janajati were 70.7%. Mothers (26.4%) reported to reach nearest health facilities on foot by 30 minutes or more. Nearest health facility had twenty-four hours seven days a week maternal health services for 57.5% of mothers. Antenatal visitors were 83.9% and 96.7% reported institutional delivery. About 27.8% mothers were aware about Postnatal care; 48.1% were aware about maternal complications; 98.1% mothers had at least one PNC visit; and 34.4% reported Postnatal care visit as per protocol. Lack of counseling (52.6%) was one of the main reasons for not completing Postnatal care. Age factor, husband's education, health service-related variables, availability of essential drugs and equipment in health facilities influenced Postnatal care.

**Conclusions:** Fewer mothers reported about complete Postnatal care service. Socio-economic factors, health service-related factors, experience of mothers on their previous childbirth also contributed to complete Postnatal care.

**Keywords:** Health services; maternal and child health; Nepal; postnatal care

## INTRODUCTION

Globally, around 810 women die due to preventable causes related to childbirth and pregnancy every day. Care provided to mothers before, during and after the childbirth can save the life of mother and newborn.<sup>1</sup> Low- and middle-income countries reported higher number of maternal and newborn death.<sup>2</sup>

Almost half of maternal death occur within first 24 hour and two third of death occurs within first week of delivery. Around 289,000 women die by maternal causes all around the world annually.<sup>3</sup> One of the major reasons for this high maternal mortality is inadequate access and utilization of maternal health services. According to NDHS 2016, only 57% mothers and newborn received postnatal care (PNC) checkup within two days of the delivery.<sup>4</sup>

Therefore, this study aims to explore the current PNC service status and to ascertain the factors contributing to utilization of PNC service in urban areas of Chitwan, Nepal.

## METHODS

A community based analytical cross-sectional study was conducted among the mothers who delivered within 1 years in Khairahani municipality, Chitwan from May-August 2021. Sample size was calculated using Cochran's formula.  $n = z\alpha^2 pq / d^2$  (Cochran's formula). Where, n= minimum sample size,  $Z\alpha$ = level of significance (1-95%=0.05 i.e. 1.96), p= prevalence of PNC utilizers i.e. 57% (0.57)<sup>4</sup>, q= 1-p i.e. 0.43, d= margin of error set at 7% i.e. 0.07, Hence, substituting the formula,  $n = Z\alpha^2 pq / d^2 = (1.96)^2 \times 0.57 \times 0.43 / (0.07)^2$   $n = 192.15 \approx 192$ . To reduce non-response error, additional 10% was added

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so, desire sample size was  $(n) = 192 + 19.2 = 211.2$  i.e. 212. The sample size after calculation was 212 with 10% non-response rate. Non-probability purposive sampling technique was used to select mothers.

Data were collected through face-to-face interview method using semi-structured pre-tested questionnaire in Nepali language. Pretesting of the tools were done 2 weeks before final data collection in adjoining wards of study among 22 participants. Necessary modification was done prior to final data collection. Socio-demographic variables (Age, education level, occupation, family size, decision maker in family), health-service related variables (time to reach nearest health facility, availability of quality maternal service at HF), obstetric care related variables (ANC, place of delivery, time duration of staying hospital, experience of maternal complication), and awareness of PNC service-related questions were included in questionnaire.

Utilization of postnatal care service was the outcome variable. Mothers who attended 3 postnatal visits as per protocol were classified as complete PNC user and those who visit only for 1 or 2 times were classified as Incomplete user.

Collected data were coded, analyzed, and interpreted using SPSS version 20. The frequency, mean and percentage of data were calculated through descriptive analysis. Association between PNC service and exposure factors were analyzed by chi-square test using p-value ( $<0.05$ ).

Ethical clearance was taken from Institutional Review Committee (IRC) of Shree Medical and Technical College (SMTC IRC Ref #20210218-91). Formal permission was taken from local authority. Written informed consent were taken from each respondent. They were assured as information received from them will be used for research purpose only. All the interviews were conducted in local Nepali language. The tools of the present study were first prepared in English. Then translated into Nepali and then again translated into English for linguistic validation.

## RESULTS

Higher number of mothers (39.2%) were in 25-29 years age groups. Majority were Hindu and Janjati. More than half were in joint family and at least secondary level education of husband and unskilled or semi-skilled by their occupation (Table 1).

**Table 1. Socio-Demographic characteristics of mothers (n=212).**

Characteristics	Frequency	Percent (%)
<b>Age in Years</b>		
<20	16	7.5
20-24	77	36.3
25-29	83	39.2
≥30	36	17.0
<b>Religion</b>		
Hindu	190	89.6
Muslim	4	1.9
Christian	5	2.4
Buddhist	13	6.1
<b>Ethnicity</b>		
Janajati	150	70.7
Brahmin/Chhetri	51	24.1
Muslim	4	1.9
Dalit	7	3.3
<b>Types of family</b>		
Joint	123	58.1
Extended	27	12.7
Nuclear	62	29.2
<b>Education status of mothers</b>		
Up to Basic level	72	34.0
Secondary and above	140	66.0
<b>Education level of respondent's husband</b>		
Basic Level	68	32.1
Secondary and above	144	67.9
<b>Occupation of respondent's husband</b>		
Unskilled and semiskilled	123	58.02
Skilled	89	41.98

Availability of skilled health workers, services, service delivery center and service satisfaction were almost as expected but the walking distance up to health facility was longer. Antenatal visit as per protocol, proportion of institutional delivery and postnatal visit trend was good but counselling on complete PNC visit was not adequate. Iron and Vitamin-A supplementation at PNC visit was good. Only around half of the participants reported the 24 hours availability of maternity care service and availability of essential drugs; and half of them were discharged within 24 hours after receiving care (Table 2).

**Table 2. Availability of Health service-related factors (n=212).**

Characteristics	Frequency	Percent (%)
Time to reach nearest health facilities on foot by 30 minutes or more	56	26.4
24-hour availability of maternal health services	122	57.5
Skilled health worker always available	212	100
Availability of essential drug and equipment in health facilities	121	57.1
Good thought on availability of services at HF	198	93.4
Fully satisfaction with behavior of service provider	206	97.2
Sufficient physical infrastructure at health facilities	191	90.1
<b>Obstetric care related variable</b>		
Had ANC visit as per protocol	177	83.9
Had institutional delivery	205	96.7
Discharged from health facilities within 24 hours of delivery	109	53.2
Had 2 or more children	92	43.4
Had complication during maternal period	111	52.4
Mothers known about PNC Services	59	27.8
Mothers known about maternal complication	102	48.1
<b>PNC visit related variables</b>		
Had PNC visits on last childbirth	208	98.1
Had three PNC visit as per protocol	73	34.4
First PNC visits within 24 hours of delivery	208	98.1
Husband and wife decide for PNC services	25	41.67
<b>Reasons for incomplete PNC visit (#=135)</b>		
Ignorance	4	3
Busy in household work	3	2.2
Lack of counselling on complete PNC visit	71	52.6

Due to fear of Covid-19 (situational reason)	23	17
No problem seen on health	34	25.2
<b>Reasons for complete PNC visit (#=73)</b>		
Admitted at health facility	21	28.8
As advised by health personnel	29	39.7
Baby illness	14	19.2
Mother's illness	9	12.3
<b>Services received during PNC</b>		
Immunization for newborn	74	35.6
Iron tablet supplementation for mother	191	91.8
Counselling on EBF	53	25.5
Hygiene and nutritional education received	28	13.5
Vit. A supplementation to mothers	182	87.5
Postnatal FP counselling and services	6	2.9
Management of complication after childbirth	90	43.3

We found age factor was one of the reasons for utilizing complete postnatal service. Mothers whose age was above 25 years were more likely to complete PNC visit. Similarly, respondent's husband who were highly educated were found to be contributing to completing PNC visit (Table 3).

Health service-related variables such as time to reach health facility, availability of essential drugs and equipment at health facility and satisfactions of clients with health workers were tested against the PNC service utilization as per protocol. In this study, we did not find any statistical relationship with these tested variables ( $P>0.05$ ) (Table 4).

Furthermore, obstetric care related variables were tested against PNC service utilization. Antenatal checkup history, birth order of last child, awareness about PNC services did not have any relationship with PNC service utilization ( $P>0.05$ ). Moreover, awareness about maternal complications, experience of complication at maternal period, duration of stay at hospital and place of delivery showed statistically significant relationship with PNC service utilization ( $P<0.05$ ) (Table 5).

Table 3. Association of socio-demographic characteristics of mothers with PNC service utilization (n=212).

Characteristics 3+ Visits (#73)	PNC Service >3 Visits(#139)		x2- Test	P value
Age	<25 years	25 (26.9) 68 (73.1)	4.186	0.041*
	≥25 years	48 (40.3) 71 (59.7)		
Religion	Hindus	66 (34.7) 124 (65.3)	0.074	0.785
	Non-Hindus	7 (31.8) 15 (68.2)		
Family Type	Nuclear	22 (35.5) 40 (64.5)	0.043	0.836
	Joint/Extended	51 (34) 99 (66)		
Mother's Education	Up to basic level	22 (30.6) 50 (69.4)	0.726	0.394
	Secondary level and above	51 (36.4) 89 (63.6)		
Mother's Occupation	Housewife	61 (33.9) 119 (66.1)	0.157	0.692
	Others	12 (37.5) 20 (62.5)		
Husband Education	Up to basic level	16 (23.5) 52 (76.5)	5.273	0.022*
	Secondary level and above	57 (39.6) 87 (60.4)		
Husband's Occupation	Unskilled and semiskilled	42 (34.1) 81 (65.9)	0.011	0.917
	Skilled	31 (34.8) 58 (65.2)		
Family has sufficient foods for months	Less than 6 months	57 (34.8) 107 (65.2)	0.033	0.855
	More than 6 months	16 (33.3) 32 (66.7)		

Table 4. Association of health service-related factors with PNC service utilization by mothers (n=212).

Characteristics 3+ Visits (n=73)	PNC Services >3 Visits(n=139)		x2- Test	P value
Time duration to reach HF	Less than 30 minutes (156)	57 (36.5) 99 (63.5)	1.159	0.282
	30 minutes or more (56)	16 (28.6) 40 (71.4)		
Availability of essential drugs and equipment at HF	Always (121)	37 (30.6) 84 (69.4)	1.856	0.173
	Sometimes (91)	36 (39.6) 55 (60.4)		
Satisfaction with behavior of service provider	Fully (206)	72 (35) 134 (65)	0.863	0.353
	Partially (6)	1 (16.7) 5 (83.3)		

Table 5. Association of obstetric care related factors with PNC service utilization by mothers (n=212).

Characteristics 3+ Visits (n=73)	PNC Services >3 Visits(n=139)		x2- Test	P value
ANC visit as per protocol	Yes (177)	65 (36.7) 112 (63.3)	2.194	0.139
	No (34)	8 (23.5) 26 (76.5)		
Place of delivery	Health facilities	73 (35.6) 132 (64.4)	3.802	0.050*
	Home	0 (0) 7 (100)		
Duration of stay at hospital	<24 hour	3 (2.8) 106 (97.2)	109.594	0.000*
	≥24 hour	70(72.9) 26 (27.1)		
Birth order of last child	1 child	44 (36.7) 76 (63.3)	0.611	0.435
	2child or more	29 (31.5) 63 (68.5)		
Experience of complication at maternal period	Yes	73 (65.8) 38 (34.2)	101.308	0.00*
	No	0 (0) 101 (100)		
Awareness about PNC services	Yes	18(30.5) 41 (69.5)	0.558	0.455
	No	55(35.9) 98 (64.1)		
Awareness about maternal complication	Yes	43 (42.2) 59 (57.8)	5.193	0.023*
	No	30 (27.3) 80 (72.7)		

## DISCUSSION

Current study revealed that almost all mothers had done at least one PNC visit on their last child delivery. Still, thirty four out of hundred mothers had completed PNC visit as per protocol. However, eighty four out of hundred mothers completed ANC checkup as per protocol. Mothers aged 25 years and above were significantly associated with complete PNC visit. On obstetrics related factors, mothers who delivered at health facility and time duration of stay for at least 24 hour or more, mothers who experienced complications at any stage of maternal period and aware about complications were found to be factors for utilizing complete postnatal care service. Regarding complete PNC checkup, similar kind of result was found in study done in Debre Birhan Town, Ethiopia.<sup>5</sup> We reported institutional delivery is factor for complete PNC service as compared to home delivery. Similar relationship was reported on previous studies too done at India and Nepal.<sup>6,7</sup> Education of them didn't associate with PNC service utilization. Similar result was found in study conducted in Baglung district of Nepal<sup>8</sup> and Malawi.<sup>9</sup> But education status of respondent's husband was significantly associated with PNC utilization. This was consistent with a study done in Madhya Pradesh, India,<sup>10</sup> and Myanmar.<sup>11</sup>

Mothers who experienced complications once in their maternal stages (pregnancy to postnatal period) were more likely to utilize PNC service than others. Alike study conducted in Debre Markos Town; Ethiopia revealed that the use of postnatal care services has been significantly influenced by delivery complications while giving birth. Mothers who faced delivery complication while giving birth were 2.58 times more likely to get postnatal care services than mothers who did not face complications while giving birth.<sup>12</sup> The study conducted in Chitwan showed that those mothers who experienced any danger sign during pregnancy and postnatal period were more likely to go for PNC visit.<sup>13</sup>

Mothers who were aware about maternal complications or danger signs were more likely to utilize PNC service than those mothers who weren't aware. This finding were supported by other previous studies too which were conducted in Zuria district, Jimma town of Ethiopia, and Myanmar.<sup>11,14,15</sup> The possible reason for this factor might be as the mother became aware about possible complications in maternal stage, they get motivated towards maternal health services and seek for frequent health services as early as possible with the aim of preventing complications in maternal and newborn health.

We reported mothers aged 25 and above were found completing PNC visits than others. Similar findings were reported by other studies done at Malawi, Tanzania, and Tigray region Ethiopia respectively.<sup>9,16,17</sup> However, similar study completed at Rwanda, Nepal and Zuria district Ethiopia respectively<sup>14,18,19</sup> concluded that the proportion of PNC service user is decreased with the increase of their ages. Regarding obstetric care, 96.7% mothers delivered their last child at health facilities which seems to be quite good result than study conducted in Kenya, Tanzania and other districts of Nepal respectively.<sup>16,20,21</sup> Similar result was explored on regarding ANC checkup as per protocol study done at Kathmandu Valley, Nepal with a coverage of 83%.<sup>22</sup> Likewise, similar study done at Afghanistan and different parts of Nepal has shown less coverage of ANC visit as per protocol.<sup>23-25</sup> About 34.4% mothers were able to complete postnatal visit on this study while similar studies conducted at another region were found lower.<sup>21, 26</sup> But study conducted at Srilanka had quite good result with 76.9% of 3 PNC visits as per protocol.<sup>27</sup>

As the mothers who gave birth in last 12 months were included for study, there might be a chance of recall bias during the data collection. Being a cross-sectional study, which was done in 5 wards of a municipality, the current findings might not be representative and generalizable for whole district and country. It only provides information on status of utilization of complete PNC visits as per protocol and some of the factors for PNC services however more in-depth cultural and societal reasons for not completing PNC is not explored. Recall bias, information bias, observer bias might have occurred during the interview however remedies were taken to precise information.

Health care providers and policy makers are recommended to increase awareness on maternal complication among mothers through community-based program to uptake of complete PNC service which is fundamental to prevent maternal and neonatal mortality. Still, institutional delivery needs to strengthen. PNC service should be focused on mothers those staying less than 24 hours at HFs during delivery, whose husband are less educated to increase complete utilization of PNC service. Another study with more participants, comprehensive tools and more sophisticated methods is also recommended.

## CONCLUSIONS

This study reported that PNC service still needs to strengthen. Fewer mothers reported about complete PNC service. Age, education status of husband, place of delivery, duration for admission in hospital,



experiencing complications during antenatal period and having awareness on maternal complications were found associated with complete PNC service utilization.

#### CONFLICT OF INTEREST

The authors declare no conflict of interest

#### REFERENCES

- World Health O. Maternal mortality factsheet: who.int; 2019. Available from: <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality/>.
- Haileamlak A. Maternal and Newborn Mortality- Still the Greatest Disparity between Low-Income and High-Income Countries. *Ethiop J Health Sci*. 2018;28(4):368.[Article]
- Bank W. 289,000 women died in 2013 due to complications in pregnancy and childbirth: [blogs.worldbank.org; 2014](https://blogs.worldbank.org/2014/08/289000-women-died-2013-due-complications-pregnancy-and-childbirth/). Available from: <https://blogs.worldbank.org/opendata/289000-women-died-2013-due-complications-pregnancy-and-childbirth/>.
- Ministry of Health - MOH/Nepal, New ERA/Nepal, ICF. Nepal Demographic and Health Survey 2016. Kathmandu, Nepal: MOH/Nepal, New ERA, and ICF, 2017.
- Angore BN, Tufa EG, Bisetegen FS. Determinants of postnatal care utilization in urban community among women in Debre Birhan Town, Northern Shewa, Ethiopia. *J Health Popul Nutr*. 2018;37(1):10.[Article]
- Kaphle H, Gupta N, Bose D, Paul A, Singh A, Kumar D. Factors Associated with Utilization of Postnatal Care in Myagdi District of Western Nepal. *Int J Health Sci Res*. 2018;8(11):11.
- Pandey D, Meshram P, Sharma A, Tiwari R, Kasar PK. An assessment of utilization of postnatal care services in urban area Jabalpur district. *Int J Com Med Public Health*. 2019; 6(9).[Article]
- Chhetri S, Shah R, Rajbanshi L. Factors Associated with Utilization of Complete Postnatal Care Service in Baglung Municipality, Nepal. *Int J Reprod Med*. 2020;2020:2892751.[Article]
- Khaki JJ, Sithole L. Factors associated with the utilization of postnatal care services among Malawian women. *Malawi Med J*. 2019;31(1):2-11.[Article]
- Sharma A, Thakur PS, Kasar PK, Tiwari R, Sharma R. Utilization of post natal care in tribal area of Madhya Pradesh, India: A community based cross-sectional study. *Int J Med Sci Public Health*. 2014;3(10):1266-71.[Article]
- Mon AS, Phyu MK, Thinkhamrop W, Thinkhamrop B. Utilization of full postnatal care services among rural Myanmar women and its determinants: a cross-sectional study. *F1000Res*. 2018;7:1167. [Article]
- Limenh MA, Endale ZM, Dachew BA. Postnatal Care Service Utilization and Associated Factors among Women Who Gave Birth in the Last 12 Months prior to the Study in Debre Markos Town, Northwestern Ethiopia: A Community-Based Cross-Sectional Study. *Int J Reprod Med*. 2016;2016:7095352.[Article]
- Shrestha NTB, Piryani S, Khanal G. Postnatal care services utilization in bharatpur sub metropolitan city, Chitwan, Nepal. *J Chitwan Med Col*. 2019;9(29).[Article]
- Yoseph S, Dache A, Dona A. Prevalence of Early Postnatal-Care Service Utilization and Its Associated Factors among Mothers in Hawassa Zuria District, Sidama Regional State, Ethiopia: A Cross-Sectional Study. *Obstet Gynecol Int*. 2021;2021:5596110.[Article]
- Abera B, Araya F, Rad M, Ysuf EA. Postnatal Service Utilization and Associated Factors among Women who gave Birth in the last 12 months Prior to Study Period in Jimma Town, Southwest Ethiopia. *Res Square*. 2020. [Article]
- Kanté AM, Chung CE, Larsen AM, Exavery A, Tani K, Phillips JF. Factors associated with compliance with the recommended frequency of postnatal care services in three rural districts of Tanzania. *BMC Pregnancy and Childbirth*. 2015;15(1):341.[Article]
- Alemayehu M, Gebrehiwot TG, Medhanyie AA, Desta A, Alemu T, Abrha A, et al. Utilization and factors associated with antenatal, delivery and postnatal Care Services in Tigray Region, Ethiopia: a community-based cross-sectional study. *BMC Pregnancy and Childbirth*. 2020;20(1):334.[Article]
- Rwabufigiri BN, Mukamurigo J, Thomson DR, Hedt-Gautier BL, Semasaka JPS. Factors associated with postnatal care utilisation in Rwanda: A secondary analysis of 2010 Demographic and Health Survey data. *BMC Pregnancy and Childbirth*. 2016;16(1):122.[Article]
- Khanal V AM, Karkee R et al. Factors associated with the utilisation of postnatal care services among the mothers of Nepal: analysis of Nepal Demographic and Health Survey 2011. *BMC Women's Health* 14. 2014;19.[Article]
- Kawakatsu Y, Sugishita T, Oruenjo K, Wakhule S, Kibosia K, Were E, et al. Determinants of health facility utilization for childbirth in rural western Kenya: cross-sectional study. *BMC Pregnancy and Childbirth*. 2014;14(1):265. [Article]
- Silwal RC, Shibanuma A, Poudyal AK, Ikeda S, Jimba M. Difference in factors associated with continuum of care completion rate from pregnancy to postpartum period in rural Nepal: a community-based, cross-sectional study.

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- BMJ open. 2021;11(6):e044928.[\[Article\]](#)
22. Bhatt L, Pal L, Dhama S, Thapa K. Compliance of Iron and Folic Acid Supplementation among Postpartum Urban Mothers of Kathmandu Valley. *J Nep Paed Soc.* 2021;41:154-61.[\[Article\]](#)
23. Silwal K, Poudyal J, Shah R, Parajuli S, Basaula Y, Munikar S, et al. Factors Influencing Birth Preparedness in Rapti Municipality of Chitwan. *Int J Ped.* 2020;2020:9.[\[Article\]](#)
24. Khankhell RMK, Ghotbi N, Hemat S. Factors influencing utilization of postnatal care visits in Afghanistan. *Nagoya J Med Sci.* 2020;82(4):711-23.
25. Choulagai B, Onta S, Subedi N, Mehata S, Bhandari GP, Poudyal A, et al. Barriers to using skilled birth attendants' services in mid- and far-western Nepal: a cross-sectional study. *BMC Int Health Human rights.* 2013;13:49.[\[Article\]](#)
26. Wudineh KG, Nigusie AA, Gesese SS, Tesu AA, Beyene FY. Postnatal care service utilization and associated factors among women who gave birth in Debretabour town, North West Ethiopia: a community- based cross-sectional study. *BMC Pregnancy and Childbirth.* 2018;18(1):508.[\[Article\]](#)
27. Perera UAP, Assefa Y, Amilani U. Postnatal care coverage and its determinants in Sri Lanka: analysis of the 2016 demographic and health survey. *BMC Pregnancy Childbirth.* 2021;21(1):299.[\[Article\]](#)